



**Autistic Children Discovering Life Through  
Movement: Movement Therapy**



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## Preface

In 2002, I was approached by a mother who had a child living with autism. She had heard that private lessons in gymnastics might help her child. I had never heard of autism and was unsure of what to expect; therefore, I decided that it would be best if I did the private lessons myself. This was the beginning of a new direction in my career. The child had to attend his lesson when the gym was empty, which was lunch hour. He was overwhelmed, frightened, unable to cooperate and resistant to new experiences. He often had angry outbursts and became over-stimulated by the end of his class when others began arriving for their lessons. My first challenge was to create a safe environment and to relax the child so that he felt able to tolerate this environment and could develop a sense of trust in me. This was accomplished over time with consistent strategies and patience.

My next challenge was to expand his comfort level while others were present at the facility. We gradually expanded his comfort to include other children arriving for classes as well as, staff members. As his trust grew, we were able to expand his sensory threshold and repertoire of physical capabilities and experiences, greatly enhancing his enjoyment of the everyday world we take for granted. I suggested to his mother that we integrate my work with that of his other specialists. This proved to be very beneficial, enabling him to make new brain path connections and to increase his cognitive and verbal abilities which increased his ability to participate in the world. I drew upon my knowledge and belief that there is a big connection between gross motor development and the acquisition of learning and fine motor skills.

Movement therapy establishes a playful environment, which encourages the child to participate. This friendly and playful environment is non-threatening and allows the child to reduce his or her anxiety levels, learn to be a participant and develop a trusting relationship with the therapist. After several months of one on one therapy, my next challenge was to teach this child how to participate with other children his own age and to learn the value and joy of peer interaction. I was able to totally integrate this child into a regular program with six other boys his age without autism after one and a half years of private lessons. He was able to work with his class mates in a cooperative manner and manage an entire class with no behavioural issues. This was the beginning of what we now call Movement Therapy. The positive outcome of this student attracted more and more parents of children who live with autism.

Vivien Symington

B.A./B.P.H.E., Founder of Movement Therapy

February 28, 2008

I worked on the Movement Therapy program for 6 months in 2007. It was a life changing experience - so different from anything I had ever come across in the treatment of children with Special Educational Needs. The program goes beyond the narrow definition of 'disability' and focuses on the whole child - providing an effective treatment in a supportive atmosphere.

Through approaching the area of autism from an unusual perspective, Vivien has seemingly found a way to help children 'go back' to a stage of neural development before signs of abnormal behavior and give them a chance to start again. She does not think that they should simply be 'trained' to disguise their 'odd' behavior as seems to be the case in some contemporary therapies. Instead, she works with each child to discover some of the underlying reasons for the behaviors such as a lack of knowledge about their bodies. She then sets about 'fixing' the reasons for these base problems to allow them to start again and develop normal knowledge and thus normal behavior based upon this. This approach is particularly successful due to the environment in which she works. She ensures that each child feels secure, accepted and included by all other children, staff and parents in the gym and made to feel as an integral part of the gym itself.

I believe that Vivien's therapy is inspirational and with the increase in the number of recorded cases of autism together with the increase in a sedentary lifestyle, her approach can only increase in importance. She sees the potential in every child and has a unique way to unlock this. A quote from a past parent sums up my feeling towards the therapy - they were describing the changes in their child's behavior, confidence and social skills. She simply said that "no medicine can do that". This, I believe, is the most important aspect to Vivien's therapy - it doesn't look at a child and search for a specific 'thing' that can be 'fixed' but tries to find what is holding that child back from reaching their full potential and remove the obstacles in the way - be they fear of heights, over sensory stimulation or confidence. It is a groundbreaking treatment and I will keep her approach in the back of mind forever when dealing with children in the future.

Caroline Standring

M.A./P.G.C.E., Co-author

February 28, 2008

## Introduction:

Movement Therapy is an innovative approach towards the treatment of Autism. It has been designed by Vivien Symington (BA/BPHE) who, through her work with a number of non-verbal, low functioning autistic children, recognized a connection between motor skill development and readiness for acquisition of other skills.

The program is based around the physical, social, and emotional developmental stages that neurologically typical children go through in the first few years of life. It is based on the belief that many of the symptoms presented by children with autism may be, in part, caused by a disruption in these stages. Through modeling the physical and emotional activities typical of each stage, it allows children to 'go back' and master each one.

To do this, Vivien utilizes all aspects of a gymnastics environment to work on the seven main areas of motor development: height, flight, landing, swing, spring, rotation and balance. She does this through intensive one-on-one work that encourages attention, trust, and intimacy between the therapist and the child. This secure relationship provides the foundation for enhancing social communication and emotional regulation.

The program aims to develop a genuine desire to be a participant in our world. It works to eliminate problematic behavior and enable children to participate more fully in everyday life. It encourages children to overcome their fears and through this, develop self esteem through successful accomplishment and the intrinsic sense of knowing "I can".

The program is a unique form of treatment but draws inspiration from a number of contemporary therapies including Sensory Integration, Occupational Therapy, Applied Behavioral Analysis, Relationship Development Intervention, and the DIR (Developmental, Individual-Difference, Relationship-Based)/Floortime approach. In addition it incorporates findings from research in the fields of learning styles and neuroplasticity. Vivien works closely with the treatment team and family members to work towards targets from all aspects of everyday life.

## What is Autism and how is Movement Therapy effective?

Autism is a complex developmental disability that typically becomes apparent between 18 months and 3 years of age. It is officially defined as a **behavioral disorder of speech, communication, social interaction, and repetitive type compulsive behavior** in the DSM-IV (American Psychiatric Association, 1994; see appendix 1). **The most recognizable characteristics include a lack of conversational reciprocity, difficulties in understanding or using eye contact/body language, intense preoccupation with a special interest and lack of imaginative play.**

In addition to these social aspects, there are a number of physical symptoms that are commonly reported, despite not being required for diagnosis. Leo Kanner (1973), an Austrian-American psychiatrist and physician known for his work related to autism, reported obvious motor problems such as repetitive stereotypic mannerisms in his first descriptions of patients; many parents report 'unusual' or 'clumsy' movements. Current literature is beginning to include these physical aspects and much research is being conducted into the less obvious abnormalities including unusual responses to sensory stimulation and sensory processing. Indeed, the Hearing, Speech and Deafness Centre sets out the following as indications of Autism with the physical aspects featuring heavily on the list:

### **1. Abnormal responses to sensations of touch, taste, hearing, sight and smell.**

- poor attention to and/or withdrawal from sights, sounds and touch
- inappropriate smelling, licking or staring
- self-stimulating movements
- hyper or hypo activity

### **2. Delayed development of motor skills.**

- problems with fine motor skills, including speech, grasping objects
- delayed crawling, walking and running
- apraxia of motor skills (difficulty with voluntary motor skills)
- clumsy or awkward movements

### **3. Delayed development of communication skills.**

- absence of language
- inability to name objects
- lack of nonverbal communication, such as facial expressions and gestures.
- echolalia (echoing or repeating what is said)
- difficulty communicating basic wants and needs or answering and asking questions

### **4. Inappropriate socialization.**

- inappropriate emotional responses or behavior for unknown reason
- resistance to change in routines
- failure to develop cooperative play and friendships
- rituals or repetitive and unusual motions
- inappropriate or unusual attachments to objects

This focus on the physical aspects has led many to suggest that they may underlie the more recognizable social symptoms and provide a clue to effective treatment. Dr Jane Ayres, as quoted in Aquilla, (2006), sums up this approach as she argues that **“the most basic aspect of human behavior is the organization of percepts and the response to these percepts. The being who cannot perceive his physical environment well, or act effectively upon the environment, lacks the basic material for organizing more complex behaviors”** including the most complex of all – social interaction and communication.

Williamson and Anzalone (2001) identify five interrelated components to sensory integration and difficulties in each could underlie the social difficulties seen in the disorder:

- **Registration – the level of input required to register an event.**

Children with Autism have often been found to have abnormalities in the level of stimulation needed to recognize sensory stimuli. Some children are hyper-responsive and need very low levels of stimulation. If stimulation is not regulated they may feel ‘bombarded’ - finding seemingly acceptable levels of noise, light, touch, etc. distressing. This can cause ‘unexplained’ tantrums and/or cause the children to seek out calm, structured environments, display repetitive behavior or have rigid preferences for types of food, clothes, etc. to limit their stimulation. Close physical contact (e.g. hugs or touching in typical children’s games) may also be avoided as touching may be uncomfortable. Some children have the opposite problem and are hypo-responsive - needing high levels of stimulation to recognize any sensory stimuli. With ‘normal’ levels of stimulation they may pay little attention to their environment and/or have delayed responses. In addition, they may seek out activities that provide excess stimulation such as stimming or ‘talking to themselves’, or using objects to provide deep pressure.

- **Orientation – determining what needs attention.** Once a sensory stimulus has been registered, the child needs to decide whether or not it is important enough to pay attention to. Uta Frith (1989), a well known researcher of Autism, Asperger’s syndrome, and other cognitive disorders, argues that being unable to determine what to attend to (especially if a child is hyper-responsive) can lead to difficulties seeing the ‘whole picture’. Children may focus on small ‘insignificant’ details (such as the color of a person’s shoes) to the exclusion of larger details (the expression or interactions between the wearers of the shoes) and cause problems understanding social interaction. Attention to ‘irrelevant’ details may also underlie fixations on repetitive behaviors.

- **Interpretation – interpreting information in relation to previous experience.** Once a stimulus has been registered and labeled as important, it needs to be linked to past experience to interpret its meaning. Atypical language, memory and emotional development often seen in children with Autism may interfere with this and cause experiences to be inappropriately labeled and/or interpreted as new or unfamiliar. Wilbarger and Wilbarger (1991) claim that this difficulty interpreting sensations leads to sensory defensiveness and a constant hyper-aroused state of ‘fight or flight’. Children may engage in sensory seeking behaviors that calm them such as creating an excessive amount of noise through humming or squeezing themselves for deep-touch pressure. Yack, Sutton and Aquilla (1998) argue that autistic children’s obsession with routine is because “they strive for predictability in a world that bombards them with sensations that are difficult to understand”.

▪ **Organization and execution of a response – physical, emotional, cognitive**

Difficulties with the initial stages of sensory registration make appropriate responses hard and reactions may be exaggerated or minimized. In addition, Hill and Leary (1993) found difficulties in motor planning in children with Pervasive Development Disorders in starting, combining, and switching motor acts.

Vivien focuses on each area of sensory processing by providing an environment rich in all sensory experiences – but pays particular attention to the ‘hidden’ senses – the Vestibular, Proprioceptive and Tactile senses. The following information is adapted from The Adventure Trails eBook, a product of Brain Highways, developed by Nancy Sokol Green (2003).

**The Vestibular System:**

This system provides information regarding the position of the head. It helps make sense of the vast array of sensory information received as all information is processed in relation to it. An example of this would be if you moved your head to one side, the visual information you would be receiving would also be tilted – causing concern if you were not aware of the position of your head. Children with hyper-sensitive vestibular systems are aware of every small movement of their heads and can feel dizzy or experience motion sickness with walking, balancing on the beam, or running, etc. This can result in a desire to restrict their movements and a fear of trying new experiences. Children with hypo-sensitive systems on the other hand don’t receive enough information about their position and often need to move their bodies constantly to provide stimulation – often receiving diagnoses of Hyper Active children.

Movements that tilt the head in different directions and move the body through space (e.g. swinging on the trapeze or in the hammock or rolling on the floor) develop the ability to balance and help develop the system.

**The Proprioceptive System:**

This is a system of nerves found in muscles which provides feedback about where they are and what they are doing. It allows you to move a glass to your mouth without having to watch your arm and allows you to model another person’s behavior. Abnormalities in this system make it difficult to know where your limbs are in space and thus cause difficulty controlling them. Children may seem ‘clumsy’ as they have little control over their bodies and may have difficulty interacting with others – e.g. regulating the pressure necessary for close physical contact, understanding the concept of personal space and/or modeling the fine movements that comprise facial movements important in nonverbal communication.

Movements that cause the muscles to move in unusual ways help develop this system. This includes jumping on the trampoline and balancing on high narrow objects such as the beam.

**The Tactile System:**



This is a system of nerves found throughout our skin and provides information when we are touching something or when something is touching us. It provides information about the type, intensity and duration of the touch. Children with hyper-sensitive systems may overreact to any light touch and present avoidance/aversive behaviors known as “tactile defensiveness”. This may include un-explained tantrums when certain textures/people touch their skin and a desire to regulate their environments to regulate contact with unwanted stimuli. Children with hypo-sensitive systems may display the opposite behavior and seek out intense tactile stimulation.

Contact with objects with different textures such as the surface of the trampoline, air-track and beam can help to develop this system, as can time in the hammock, as this creates all over deep pressure for the body.

### Development of Movement Patterns

Bonnie Bainbridge Cohen, founder of The School of Body-Mind Centering, did extensive work on the exploration and teaching of movement based upon anatomical, physiological, psychological, and developmental principles. She states that “Development is not a linear process, but occurs in overlapping waves with each stage containing elements of all the others” (p. 16, 1993). Vivien utilizes this principle in movement therapy by identifying the gaps in primary motor learning and going back to that stage.

According to Cohen, there are 14 basic developmental movement patterns. These patterns all underlie each other and an inefficiency in any one will affect all of the others. The first of these patterns is spinal movement which initiates from the head, and then from the tail. The second pattern is homologous movement, where initiation occurs from the two hands or the two feet together. The third pattern is homolateral movement, which occurs when the right arm and right leg are going backward or forward together. The fourth stage is contralateral movement, where the right hand and left leg go forward or backward together. Contralateral movement is demonstrated in a normal crawling, walking, or running motion. Vivien incorporates all of these patterns in therapy to provide a more comprehensive framework for normal locomotive development. For example, a movement problem in the vertical plane can be traced to a developmental pattern that can be worked through while lying down in the horizontal plane.

Many of the autistic children whom Vivien has worked with have been nonverbal. Of these children, several have progressed to being able to communicate verbally over the course of the therapy. This relationship between movement and speech is addressed by Cohen in her book, “Sensing, Feeling and Action” (1993). She states that movement and speech develop simultaneously. This would explain why movement therapy is effective in developing verbal skills.

### Primitive Reflexes

The following information is adapted from Bonnie Bainbridge Cohen’s book, “Sensing, Feeling and Action” (1993), Eve Kodiak’s book, “Rappin’ on the Reflexes”

(2006), Adventure Trails (2003) by Nancy Sokol Green, and Kay Hogan's article, "The Ear and the Alexander Technique" (2004).

Primitive reflexes appear before or at birth and usually become integrated into more complex patterns of movement by 4 to 6 months of age. They are controlled by the spine and brain stem and work to establish basic gross patterns of function that utilize and underlie all movements. For every reflex there is an opposite reflex, which modulates it and works as a counterbalance. In efficient movement, the opposite reflexes work together to create balanced postural tone and integrated movement. Reflexes are elicited by specific stimuli. In normally developing infants, the predicted response will happen sometimes but not every time a specific stimulus is applied. Reflexes are considered pathological if the predicted responses always or usually occur when a specific stimulus is applied. A reflex becomes integrated once that particular movement pattern has become part of one's automatic movement repertoire with or without the stimulus occurring, and in any plane in relation to gravity. Automatic movement refers to movement which occurs spontaneously without volitional direction. If the reflexes do not develop in synchrony, they remain too static or fixated, and postural tone will be too low, too high, or too fluctuating and inconsistent. If there is deficient development of these reflexes, the more advanced patterns will be absent, weak or incomplete.

### **Moro Reflex**

The Moro reflex, also known as the fight or flight reflex, has two phases. When the baby is held in a semi-sitting posture and the hand supporting the baby is suddenly taken away, the infant will first fully open and extend its arms, open its hands and cry. This is the first phase, and begins to emerge at twenty-eight weeks in utero. The second phase does not arrive until the moment of birth. The infant will flex its head, flex and draw in its arms across its body as though embracing, and close its hands. The legs may extend during both phases, unless they are already extended, in which case they may flex. A primate infant, when startled by sudden noise or movement of its mother, will open up to grasp its mother more firmly as she moves quickly through space. The Moro reflex establishes the base for all opening and closing movements of the upper torso and upper limbs in the horizontal plane. The second phase of the Moro reflex helps to balance muscle tone on the front and back of the body. Holding a child and rocking them in a secure hug position and prone and supine rocking on a roller are excellent exercises for the Moro Reflex.

If a child has a retained Moro Reflex, they are still programmed for fight or flight reactions at all times. They may be hypersensitive to sensory sensations and thus may put their hands over their ears, even if the noise level in the room is not too loud. They may have difficulty listening to the teacher as they can not filter the teacher's voice from the hum of the background noise. They can react negatively or even violently to an unexpected light touch.

A retained Moro Reflex is associated with attention problems, anxiety, hyperactivity, fight or flight reactions, hyper-sensitivity in one or more sensory channels,

poor immunity, poor self-esteem, poor visual figure-ground, and poor auditory figure-ground.

Vivien uses the following exercises to help children overcome the effects of the Moro reflex: forward and backward rolls on the roller mat, upside-down activities, holding hands while jumping on the trampoline and solitary jumping for 5 minutes.

### **Asymmetrical Tonic Neck Reflex (ATNR)**

The asymmetrical tonic neck reflex appears during the thirteenth week in utero and is integrated at six or seven months after birth. It allows a child to train his or her body on one side at a time. Lying on his back, a baby hears a sound and turns his head to hear and see it and his arm and leg on the face side will extend towards the sound. At the same time, the opposite, skull side, arm and leg bend at the elbow and the knee and extend the neck (backwards) to facilitate the motion. The head turning activates the vestibular system through shifting the fluids in the inner ears, while the extension and contraction of the limbs place the body in a position for attention. Hearing and seeing and cognition coordinate with the eagerness to reach out, grasp and communicate. Turning the head to the left, the baby frees the right ear for listening. According to Dr. Svetlana Masgutova, during ATNR development, babies characteristically spend about 80% of their time in this position. Listening with the right ear, the baby encourages language recognition and expression to develop in the left hemisphere, where Wernicke's and Broca's areas are located.

If this reflex is retained, then the body prefers to execute tasks on only one side of the body. Such preference then hinders the development of bilateral skills and automatic crossing of the midline. Children with a retained ATNR often have great difficulty with writing skills, such as rotating the page 90 degrees, holding the pencil with a vice grip or stabilizing their head in a neutral position with the non-writing hand.

A retained ATNR is associated with poor eye-hand coordination, poor bilateral coordination, poor handwriting, poor eye-tracking skills, no dominant side of the body, and directionality problems.

Vivien uses the following exercises to help children overcome the effects of the Asymmetrical Tonic Neck reflex: crawling, catching and throwing, directional jumping on the trampoline, and log rolling.

### **Tonic Labyrinthine Reflex (TLR)**

Cohen states that this reflex is one of the first reflexes to develop, underlying our bonding to the earth, and drawing us towards the Earth by increasing the postural tone of the muscles on the underside of the body. It is linked to the Moro reflex. It is a head-righting reflex which is for head control and good balance, essential to the automatic functioning of all other systems. The TLR is the basis for grounding, out of which we can become grounded in our verticality.

Failure to inhibit the TLR at the correct time adversely affects the vestibular system and its interaction with all other sensory systems. For example, a child with a retained TLR when learning to walk will not acquire true gravitational security which may be exhibited by toe walking. Reversal of letters and numbers is also a symptom of low gravitational security. A retained TLR is also associated with poor judgment about space and time, poor balance, floppy muscle tone, stiff, jerky movements, directionality problems, oculomotor dysfunction, motion sickness, time and space sequencing problems, slouching in a chair, stooping standing position, and fear of heights.

Vivien uses the following exercises to help children overcome the effects of the Tonic Labyrinthine reflex: beam, incline mats, swing, side-to-side motion, crossing midline, doggy drops on the trampoline, and directional jumping on the trampoline.

### **Symmetrical Tonic Neck Reflex (STNR)**

The symmetrical tonic neck reflex helps the child to start to defy gravity. At this stage of development, babies are starting to crawl on their hands and knees. The initial stage of the reflex is when the child raises herself up on hands, elbows and knees and rocks back and forth. When a baby lifts its' head while pushing on the hands and feet it creates the structure for locomotion. (Kodiak, pg 33, 2006). It underlies pushing backward from lying prone to sitting, and symmetrical locomotion such as frog hopping and bunny hopping. The STNR facilitates alternation between flexion and extension of the arms and legs. The next step is the lifting of the head. The STNR links the lifting of the head with the extension of the arms. Crawling is a very important stage in development as it is the first time that the vestibular, proprioceptive and visual systems are integrated. Good balance and space perception later in life develop from this integration. Crawling also provides opportunities for the eyes to cross the midline, to look ahead, and to develop eye-hand coordination. It is important to note that the distance at which a child reads or writes is the same focusing distance of a baby's hands to her eyes when crawling. If the STNR is not integrated, it is impossible for a child to crawl correctly.

A retained STNR is associated with attention problems, poor handwriting, poor posture, messy eating, slowness when copying work from the board, and clumsiness and poor coordination.

Vivien uses the following exercises to help children overcome the effects of the Symmetrical Tonic Neck reflex: doggy drops on the trampoline, wheel-barrow walks, bunny hops and frog hops, and crawling exercises.

### **Spinal Galant Reflex (SGR)**

This reflex emerges at fifteen to eighteen weeks in utero. It is activated by vibration. Sound causes the core to contract, with the shoulder and hip moving together on one side, and apart on the other. This subtle movement helps the baby make necessary adjustments to come through the birthing canal. The SGR brings the

social impulse through penetration of sound, the voice of the mother. If the SGR is not integrated, it can lead to problems at both ends of the body, from cognitive processing to control of urination.

## Review of the Literature with reference to Pathology, Treatment and Therapy Outcomes

- **Louv** (2006) and **Green** (2003) argue that all three sensory systems (vestibular, proprioceptive and tactile) are becoming underdeveloped in children due to changes in the modern lifestyle – with the reliance on the motorcar and sedentary use of the television/computer. This decline in opportunities for unrestricted physical play that moves their bodies in a variety of ways, reduces their '**sensory diet**' and thus harms the development of these systems. By providing the opportunity to move in ways that stimulates all aspects of sensory input, Vivien allows them to enrich this 'diet'.
- **Boon** (n.d.) has documented the effect of difficulties encountered when infantile primitive reflexes are not successfully integrated. These primitive reflexes are simple movements that appear in the first few months of life that help to ensure survival of the newborn (e.g. reaching out with the arms if the head is moved as if they are falling). They are automatic and stereotyped movements executed without involvement of 'higher brain levels'. Each reflex is replaced by more sophisticated postural reflexes (more complex patterns of movement) as the child grows older. If this does not happen and they are retained they can "prevent the emergence of voluntary motor skills and the ability to gain true control over the body" which can cause a fight /flight response to non-threatening stimuli, difficulty judging where their body is in space, difficulty crossing the mid line, poor sequencing, attention problems, fidgeting, hypersensitivity, motor coordination problems, difficulties coping with change, poor motor skills and clumsiness. Vivien's program is effective as she uses minimal verbal commands, relying primarily on manually moving the children as "...reflexes are directed from the brainstem and executed without cortical involvement" (Green, 2003, p. 101). **The program is therefore directed at the integration of these primitive reflexes.**
- **Kolb's** (1984) research into learning styles and **Gardner's** (1983) work on multiple intelligences has highlighted the importance of tailoring teaching to an individual's preferred style of learning – whether it is **Visual, Auditory, or Kinesthetic**. Vivien believes that many of her students are kinesthetic learners who show such high levels of engagement and improvement because she provides an alternative to their mostly visual and sedentary learning opportunities in school. Movement Therapy helps children to develop their kinesthetic literacy and/or develop their Bodily-Kinesthetic intelligence.
- **Doman** (1990) has found that children go through a number of stages for 'normal' neural development and if one or all of these are missed it can cause difficulties in "future mobility, language, manual, auditory, visual and tactile competence." **Vivien concentrates on the movements that occur in the stages that children go through in the first 3 years of life as this correlates with the emergence of the first signs of Autism.** By allowing her students to 'go back' to a stage in their neural development Vivien gives her children a 'second chance' in hopes to go through these stages either independently, or by her guiding their bodies through the movements of crawling, balance, and coordination to help their brains 'rewire themselves'.
- **Doidge** (2007) documents the contemporary research on neuroplasticity, that shows how the brain is able to 're-wire' itself through constant practice and repetition of certain actions. He uses the expression "**neurons that fire together wire together**" to explain the plastic and ever changing nature of the brain. Vivien's program uses this

knowledge to help the children learn the movements and social interactions necessary for everyday life.

- **Schmitz, Martineau, Barthelemy, and Assaiante** (2003) reported that children with autism do not seem to follow an anticipatory mode of control which would support the assumption that the building of internal representations may be affected in these children because of their disorders in the integration of environmental constraints. They state that the functions of anticipation, coordination and adaptation enable children as they grow up to exercise an action towards a goal that is integrated in their environment. **Elliott, Dobbin, Rose and Sopper** (1994) found that vigorous aerobic exercise helped to reduce maladaptive behaviours and stereotypic/stimulatory behaviours.
- **Dr. Steven Gutstein**, founder of **Relationship Development Intervention**, has identified the goal of his program to be providing the majority of people on the autism spectrum with the potential to attain a true quality of life. He has identified several stages that children should go through in normal relational development. The first of these is called emotion sharing which involves the adult trying to engage in activities with the child in an effort to use their emotional expression to amplify excitement and build anticipation in the child. The second stage is called referencing, where the adult tries to introduce situations where the child will be uncertain of how to respond and will look to the adult to see what their reaction is and act accordingly. Vivien utilizes these primary stages of Relationship Development Intervention in all of her sessions, helping the child to interact and communicate with those around them.

### The Goals of Movement Therapy:

- Developing activities based on the development of children with and without disabilities, with a general goal of developing physical skills equivalent to the level of an average 10 year old
- Developing a trusting and secure relationship with adult partners (in private lessons) and other children (in the day camp setting) to provide the foundation for enhancing social communication and emotional regulation capacities
- Encouraging attention, trust, and intimacy by developing a bond between the therapist and the child
- Two-way communication with the use of a picture symbol system which establishes a structured routine for each child
- Encouraging children to overcome their fears by offering reinforcement activities following each challenging activity
- Encouraging expression and the use of feelings and ideas
- Collaborating with the treatment team professionals and family members
- Developing a genuine desire to be a participant in our world
- Developing self esteem through successful accomplishment and the intrinsic sense of knowing “I can”



## Assessment and Treatment of each child

All children are assessed when they first join the therapy which allows Vivien to observe areas of difficulty (physical, behavioral and social), areas where the child excels, and activities that act as reinforcers. Once these have been identified, she tries to identify the underlying reasons for each type of behavior – e.g. a hyper-sensitive vestibular system may make children nervous on the beams, a hypo-sensitive proprioceptive system may make children seek time in the hammock, or a sensitivity to auditory stimulation may cause a child to lose concentration or have a ‘meltdown’ if another class enters the gym. Once Vivien has identified these major areas, she focuses on activities and changes in the environment, which can produce practical behavioral change –utilizing the principles of Applied Behavioral Analysis. She creates individual programs to target each problem area – breaking it down into small steps. For example, if a child had trouble balancing on a high beam, she would work towards this as a target in a number of ways. First, she would work with the child to improve their balance – working on low beams on the floor and using activities such as the swing, trapeze and hammock to help develop the vestibular system. Secondly, she would work on activities that help children become accustomed to heights; and thirdly, she would work on building a relationship with the child so that they can trust her when they have to challenge their fears. Vivien uses repetition and positive reinforcers, measuring and recording changes to continually assess the effectiveness of each intervention and altering her behavior accordingly.

As many of the children are non-verbal when they begin the program, Vivien has developed a system of visual communication. This involves pictures of each activity and a sequence of numbers that indicate how many times the child must complete each one. This allows her to provide each child with a pictorial timeline of their session, which helps the child to focus, take turns, and allows them choice over the activity used for positive reinforcement. This ensures the child is involved in all aspects of their treatment and helps guide them from closed, disordered or inappropriate behavior into functional activity and social and communicative exchanges.

Every child starts with one-to-one sessions but some integrate into small groups with other children in the program, or regular classes with an aid. This allows both individual attention and opportunities for social interaction. It is similar to both Floortime (Greenspan, 2003) and the Son-Rise Program (Kaufman, 1998) in this respect, as the student and therapist interact in an environment that is fun, showing the child that our world is beautiful and exciting and using the child’s natural excitement and enthusiasm to foster social interaction.

Vivien has worked with a number of children – many of which have started at a relatively low level of functioning and many of whom were non-verbal. All of her children develop their motor skills through regular gymnastics activities but many also show a reduction of the behaviors associated with autism such as unexplained tantrums and rigid behavior. In addition, a number of children begin to communicate either through one to two word answers to full sentences. Vivien reinforces and works with other professionals to encourage the child towards reading, writing, number concepts,

symbolic play and meaningful inclusion within typical environments outside of the gym setting.

## Typical activities:



### **Trampoline:**

- Develops gross motor skills
- Jumping and moving the body through different planes of space helps the vestibular system
- 5 minutes of concentrated coordinated jumping at the start of a session can help to focus a hyperactive child
- Using their legs to propel themselves and landing on specific areas helps develop the proprioceptive system and body awareness, as well as the coordination required to link jumps which enhances motor planning



### **Bike Riding:**

- Maintaining balance helps the vestibular system
- Coordination of movement on both sides of the body helps bilateral integration
- Riding over rough terrain outside enhances postural adjustment
- Builds self esteem and independence



### **Hammock:**

- Moving through space in linear and circular movements can 'turn on' sluggish vestibular systems
- The hammock envelops the whole body and provides stimulation for the proprioceptive system - it may provide deep pressure which can turn off pain receptors by stimulating large muscle fibers, which can be helpful for children hypersensitive to light touch
- Provides the child with an area of safety and relaxation if the child suffers from sensory overload



### **Air track:**

- Climbing to the top of the air track helps develop gross motor skills, upper body strength and bilateral integration - it also helps some children overcome their fear of heights, which might be caused through abnormal sensory processing, in a non threatening environment
- Jumping along the track and over 'bridges' helps the children judge spaces and coordinate movements
- The rolling at the end in either a log roll or forward roll enhances their hypo-vestibular system



### **Trapeze:**

- By helping to take on/off the trapeze the children practice following instructions and work on their fine motor skills and manipulation of objects
- Catching the trapeze requires visual tracking and eye-hand coordination and getting up on to it helps build muscle tone in the upper body and fine motor skills like gripping and pulling
- The swinging motion enhances the vestibular system in a similar manner to the hammock, but with the additional benefit of having to maintain postural balance while sitting upright



### **Balance Beam:**

- The balance required to walk heel-to-toe on a beam enhances the vestibular system
- Integrating additional activities such as following commands, saying colors/shapes of objects in their way or stepping on/over these elaborates on this and enhances bilateral integration, hand-eye and foot-eye coordination and the integration of the motor system with other functions - this helps to

build broader, generalized neural networks –  
important for higher level thinking  
- Helps children overcome fears of heights.

### Best Practices for Autism Intervention Programs as set out by the BC government:

The Movement Therapy program fulfills all of the Best practices for Autism Intervention Programs as set out by the B.C. government:

- It is intensive, direct one-to-one intervention in a community setting on a year round basis;
- It uses highly supportive, structured teaching methods, based on the principles of applied behavior analysis (ABA), and incorporates a variety of strategies to facilitate efficient skill acquisition, generalization and maintenance.
- It uses functional assessment and positive behavioral support techniques for supporting children with problem behaviors;
- Vivien develops and reviews individualized behavioral plan of intervention with the family and integrates this with work on speech-language pathology and occupational therapy. This plan is constantly monitored and subject to yearly evaluation.
- The children are integrated with typical children within the gym setting;
- Vivien carries out the therapy herself and with the assistance of trained staff focusing on each child's individual patterns of strength and needs, which guides program planning, including selection of specific goals and strategies.

### About the Children:

Precisely 52 children have benefitted from Movement Therapy over the past six years. They have come from all over the Greater Vancouver Regional District ranging in age from 3 to 18 years. These children have ranged from a diagnosis of severely autistic to high functioning autistic. In every case, the student has shown marked improvement. Of the 52 children who began therapy, only three dropped out before 6 to 9 months of therapy. Of the remaining children, 11 have been integrated into our regular programs, six are in the process of being integrated, and the rest are either still coming, have moved out of the area or have been forced to stop for lack of funding. Some have changed the nature of their interaction to attend our drop-in programs or have play dates with other children in our program at the gym.

Until 6 months ago, we have not advertised the program. Our clients have all come from referrals and word of mouth. The program has expanded due to its perceived effectiveness by families and other professionals involved in the children's standard therapies.

All of our children have been involved in treatment programs as set out by the government of BC standard for the treatment of autism. Most of our children have at some time been involved in an extensive ABA program, behaviour modification program, and Occupational Therapy prior to attending Movement Therapy. Several of our students attend private schools such as the Mediated Learning Academy and the Pheonix Academy of Learning Society.

### Improvements:

In each case, the parents and other professionals treating the children have noted a marked improvement in the child's condition. The improvements range from total integration into typical gym programming to improvement in Occupational Therapy reports, physical fitness and body awareness. Not all autistic children have been fully integrated; however, eleven students have been fully integrated and seven children have progressed from non-verbal to verbal. In our observation, the most marked improvements happen in children who start Movement Therapy before the age of 7, as well as children suffering from Sensory Integration Disorder.

Most severely autistic children take from 6 to 9 months to show improvement. In one case it took Vivien two months to establish a relationship with a severely autistic 8 year old boy before she could begin an intensive movement therapy program. Three other children aged three to five, presented with no facial expression or light in their eyes; they were drooling and unaware of anything in their environment. These three children are all talking, holding pencils and engaging in relationships with other people. In these three cases, the improvement took nine months for the first sign of change. Relationships with Vivien and the parents progressed as indicated and outlined in the Relationship Development Intervention program.

Higher functioning children can show marked improvement in the first month or two. Vivien assesses each child prior to starting therapy and then chooses which area has the most profound effect on the child's ability to participate appropriately in normal life. For example, some children have core deficits in their physical body and gross motor functioning, others have sensory integration issues, some are socially inept and others have major behavioral issues which barr them from participation. Many of the children have more than one of these issues. Vivien has found that the children with severe behavioral issues are often unable to benefit from Movement Therapy until the behavioral issues are at least under control in the gym environment.

### **Funding for the Program:**

Although Movement Therapy has not been recognized by the government of BC for children 5 and under, it has been recognized for children over 5. Our children over the age of 5 are able to use their funding for Movement Therapy. In some cases Distance Education and social services pay for children to attend Movement Therapy. As well, we have received funding from the CKNW Orphan's Fund for specialized equipment and for children to attend our summer camps. All of the research for this document has been funded by Vivien Symington.

### **Frequency of Attendance:**

Most sessions range from 30 minutes to 1 hour in duration. Severely autistic children typically start with one 30 minute session per week. This time frame is used to develop a relationship with the therapist and to allow the therapist to identify some crucial reinforcer activities. This pattern will continue until there is a break through, which would be described as a change to more cooperative behavior, a willingness to try new activities, or even a willingness to follow directions.

Most of our children attend Movement Therapy twice a week. The days are separated to give one or two days between the sessions. For example a child would attend Monday and Wednesday or Monday and Thursday.

At Club Aviva, we also provide a drop-in program for children and adults with special needs. This program is offered twice a week for one hour periods. The drop-in is supervised by a staff member, but is by no means a structured program. It is important to note that children who attend only the drop-in do not make the improvements of the children enrolled in the Movement Therapy program. This finding, that intensive, structured programs are more effective than general exercise, is supported by Canadian researchers Elliot, Dobbin, Rose and Sopper (1994). Families who have children in Movement therapy are encouraged to utilize the drop-in program as an added opportunity to play and interact with their autistic child. It allows the child more repetitions at a much reduced cost, as well as time where the parents can practice with their child.

### **Gym Environment:**



The environment at Club Aviva is very busy and encompasses all ranges of activities. There are instructional programs for children starting at 18 months of age, competitive gymnastics programs, a professional cirque troupe, stunt artists training for movies, competitive trampoline programs, as well as school groups that visit for field trips. The environment where we run our Movement Therapy sessions is hectic, often noisy, and full of high energy. When severely autistic children first start, they are often brought in only at the quietest times to help them learn to focus only on the therapist. Once this is accomplished, we like to involve our students in a more typical environment. This allows for brief interactions with staff, professional athletes and other typical students. It also allows us to include others in the celebration of successes as they occur.

## Team Building:

The team behind each autistic child is crucial for the development of the child. In my experience, the children who make the most progress have an excellent team of professionals and supportive parents behind them, working cooperatively to their benefit.

### **Parents:**

Parents who involve themselves with the Movement Therapy sessions and are willing to learn and apply movement therapy techniques at home as well as in the external environment make a big difference in their child's progress. Another key factor is inclusion of the movement therapist, by the parents, as an integral component of their professional team comprising individuals such as the Special Education Assistant (SEA), Behaviour Consultant, school team, Occupational Therapist and Speech therapist.

### **Professional Team:**

I have been involved with many professional members of my children's teams over the past six years. A team that shares ideas and strategizes together helps to build a greater consistency for the child in all environments, which is very important.

An example of this would be illustrated by the following case study of one of my severely autistic children. He was suspended from school for biting his SEA and then was refused admission to another school because they did not feel they had the ability to deal adequately with his situation. I was surprised when I was informed of the situation by his mother. I had been working with this particular child for just over one year and he had never shown any signs of biting. In my opinion, the only reason he would bite was if he was threatened and felt that he had no escape. In truth, this student had been my greatest challenge, as it took me three months to get physically close enough to him that I could begin to work with him. Every time that I approached him he would bolt to the other side of the gym. If I can not physically touch and manipulate the child I can not make any progress. I was, for the first time, challenged to the point that I felt I may not be able to help him. Eventually, I did make contact and we began to make progress together. At the time of this incident I was introducing picture symbols as a means of introducing communication. He was beginning to show signs of focusing on me, reaching for me, and copying some of my actions. His crying periods and sensory meltdowns were lessening.

The school system is obliged to find a school for each student, so it was recommended that he be placed as a high priority for attending a school outside the GVRD, which specializes in autistic children. I was asked to attend the first team meeting. At this meeting, we strategized together on his entry program to the school, what his day should look like at school and what kind of re-inforcers the school could provide to help him to adjust to the new environment. I advised the school that he required lots of physical activity and I had a tour of the school to see what facilities, equipment and activities might be the most beneficial for him and the team to employ. I found a bike with training wheels and a small rebounder. He loves these two activities. The school began by periodically giving him a break to ride the bike around the hallways

of the school where they felt safe. They also had periods of time during the day that he could choose the rebounder following completion of a difficult task. I advised them to intersperse his desk work with the physical activities which are great re-inforcer activities for him. His mother and I decided that he should come to the gym three days a week immediately following school as another reward for him at the end of his day. He sleeps better following a session of Movement therapy, which also helps him to cope better with school.

After the first month at the new school our team met again. His progress was far beyond any of the team's expectations. He had settled in extremely well at school and was exhibiting fewer episodes of standing on his desk and was more frequently being able to sustain his focus to the task. He had started to copy and to match pictures and symbols. It was decided at the meeting to address his bolting by reinforcing the words "go" and "stop" and the phrase "come here". I had been using the word "no" when I wanted him to stop bolting but I agreed to use "stop" from then on. I also suggested that I could introduce the "go" and "stop" symbols while he was jumping on the trampoline. His mother and I agreed to practice "come here" at each session. He is very excited when he arrives at the gym, so we decided on a plan where I would stand at the door of the gym while his mother would have him seated 5 to 10 feet from the door. I would say "come here", which would be an easy match for him as he is always eager to begin each session. At the end of each session, the pattern would be reversed with his mother standing 5 to 10 feet away to say "come here" and also holding one of his favorite toys as a re-inforcer to encourage him to comply with the request. This would be much more difficult for him as he does not usually want to leave at the end of each session. I will act as a prompter standing behind him and encouraging him to go to his mother. It was also decided to introduce pencil holding activities at school only at the desk and I would introduce sidewalk chalk during summer camp and only outside. I also worked on his fine motor development by engaging him in gripping activities using a pincer grip and also by having him help me with rigging the trapeze and the hammock. The hammock and the trapeze are both rigged on the same rope requiring us to unwind and retie the ropes when we change from a trapeze activity to a hammock activity. He has learned to recognize how the rope is suspended and how to raise and lower each apparatus. He has also learned how to manipulate the carabiner which attaches the apparatus to the rope and then to tie the rope using figure eights with my assistance.

Every time I attend a team meeting, I learn something new and I am able to help to make contributions to the team. Each team session, although focused on one child, benefits every other autistic child that the members of that team are working with.

## Relationship Development

The success of Movement Therapy is dependent upon the interaction of the child and the therapist. The goal of the therapist is to push through the child's boundaries in order to develop areas of motor deficit. This requires the child to learn to trust that the therapist will keep them safe even when they take risks to do things they are afraid of doing. Most of the time, after several fearful attempts, which require physical persuasion by the therapist, the child will discover they enjoy the activity. This cycle develops over time so that the child develops a greater willingness to try to do things with less resistance.

As trust between the therapist and the child develops, so does a relationship bond. The child begins to look forward to their movement therapy session and exhibits an increased desire to participate with the therapist. As outlined in Relationship Development Intervention (RDI), by Stephen Gutstein, the first stage of relationship becomes observable. The first stage is called emotion sharing, which involves the adult trying to engage in activities with the child, in an effort to use their emotional expression to amplify excitement and build anticipation in the child. The second stage is called referencing, where the adult tries to introduce situations where the child will be uncertain of how to respond and will look to the adult to see what their reaction is and act accordingly. The therapist utilizes these primary stages of RDI in every session, helping the child to interact and communicate with those around them.

We go to great lengths to have the same therapist work with a child to encourage relationship development and trust. If it is necessary to change therapists, we usually go through a process of graduated change. The new therapist is introduced and attends a few sessions with the original therapist. This allows the new therapist to get to know the child's preferences, behavioural issues and fears. It allows the child to transfer or generalize trust to the new therapist. Once the child is comfortable and willing to participate fully with the new therapist, the original therapist stops attending sessions.

There have been incidences when this transition phase has been impossible for scheduling lessons. Generally, the two therapists walk through the gym and discuss the child's preferences, behavioural issues and fears. It is also important to know idiosyncrasies, which are important for relationship development. For example, a therapist was having a difficult time engaging a student who he had taken over without the graduated change plan. There were several interactions between the therapists to discuss ways of encouraging this particular child to engage. After the second week, the first therapist ran over to the new therapist and said "I forgot to mention that he has a unique high five pattern, let me show you." During the next session the new therapist used the high five pattern and everything turned around at once. The bond between the child and therapist was kindled and the child participated as usual.

### Support for the Program:

Vivien's program is gaining support from all levels of the community and is continuing to grow. She has gone from working with just one child six years ago, to a full time schedule of 30 with four staff, at the time of receiving this award.

She works closely with professionals involved with her students and many support her work and her innovative approach (see appendix 4). She has been awarded the City of Coquitlam "Accessibility Award for Health and Wellness" for 2007, in recognition of her achievements.



### Where do we go from here?

My next goal is to have a school for autistic children, which has an onsite Movement Therapy facility. We have been piloting this concept at our specialized Movement therapy summer camps. At these camps, we encourage the parents to bring school goals and activities to camp. If at all possible, I encourage the parents to have the one on one worker be someone who is already involved in the school or ABA program so that there is more continuity for the child. Our camps are one week long, lasting four hours a day. The day is full of a variety of physical activities, movement therapy sessions, classroom sessions, and social interaction. They have been very successful. The children involved settle into the classroom activities and are focused on tasks for brief periods. Each classroom activity is followed by a physically active period such as bike riding, jumping on the trampoline, swinging in the hammock, climbing, crawling and walking on the beam and pit activities. In some cases we are introducing cooperative games and team sports such as T-ball.

If this type of school is highly successful then I believe it should be a model for all teams of people working in the field of autism. For example, ImaGYM: a school with the following team: Movement therapist, Occupational Therapist, Behavior consultant, Speech Therapist and a Vocational counselor with an onsite Movement therapy facility. There is no doubt in my mind that we could make a big difference in the lives of children and families living with autism

## Appendix 1

### Definition of Autism as outlined in the Diagnostic and Statistical Manual IV

**A. A total of six (or more) items from (1), (2), and (3), with at least two from (1), and one each from (2) and (3):**

**1. Qualitative impairment in social interaction, as manifested by at least two of the following:**

- a. marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction.
- b. failure to develop peer relationships appropriate to developmental level
- c. a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest)
- d. lack of social or emotional reciprocity

**2. Qualitative impairments in communication as manifested by at least one of the following:**

- a. delay in, or total lack of, the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime)
- b. in individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others
- c. stereotyped and repetitive use of language or idiosyncratic language
- d. lack of varied spontaneous make-believe play or social imitative play appropriate to developmental level

**3. Restricted, repetitive, and stereotyped patterns of behavior, interests, and activities, as manifested by at least one of the following:**

- a. encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus
- b. apparently inflexible adherence to specific, nonfunctional routines or rituals
- c. stereotyped and repetitive motor mannerisms (e.g. hand or finger flapping or twisting, or complex whole body movements)
- d. persistent preoccupation with parts of objects

**B. Delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years:**

**(1) social interaction, (2) language as used in social communication, or (3) symbolic or imaginative play.**

**C. The disturbance is not better accounted for by Rett's disorder or childhood disintegrative disorder.**

## Appendix 2: Case Study #1 Karl aged 15

### Initial Presentation:

Diagnosed with Autistic Disorder and has significant cognitive impairments. He has features of Attention Deficit Hyperactivity Disorder and a variety of motor tics. He

has a number of anxieties and obsessions. He is home schooled and focuses on life skills. He is easy going and helpful but with little social awareness.

#### **OT Assessment Report 2004**

**Neuromuscular Skill:** No evidence of reflexes inhibiting function.

**Fine Motor Skills:** Good – can write/hold scissors/manipulate small objects

**\*\*Relies on vision to oppose his thumb to each finger and presses to hard with a pencil suggesting difficulty with proprioceptive system\*\***

**Visual Perceptual skills:** Can identify/recognize objects/shapes.

**Visual Motor:** **\*\*VERY LOW Visual-Motor Integration\***

**Sensory Profile:** Poor registration and a tendency for high threshold responses in regard to VESTIBULAR and TOUCH processing – he requires an intense amount of movement/touch to reach threshold and stimulate the receptors to create a response.

#### **Recommendations:**

As Karl has a high threshold level for Vestibular Information it takes a lot of movement experiences before the neurons respond so activities could include: *Swings, somersaults, maneuvering through an obstacle course, jumping on a trampoline, swimming and bicycling.*

He should also do activities that allow him to increase his endurance and strength such as: *animal walks, pushing/pulling activities.*

Additionally he could work on pre writing skills such as *verbalizing movements when making simple lines and shapes to increase awareness of direction, size and spacing cues and work on eye-hand coordination.*

#### **PSYCHOEDUCATIONAL ASSESSMENT REPORT 2003**

**Wechsler Preschool Scale of Intelligence:** Verbal and performance tests were significantly below expectations for his chronological age and had difficulty processing information. He talks to himself under his breath especially if asked to do verbal tasks without visual or tactile components. The greater degree of abstraction the harder it was.

**Visual Perceptual skills:** Very limited understanding of spatial configurations and although could recognize common objects this was below expectations for his age.

**Visual Motor Integration:** Much below expected for his age – difficulty with figure/ground perception and directionality

**Behavior Observations:** He was helpful and used eye contact when he understood what was expected of him. When tasks were too abstract he seemed to withdraw, talk to himself and lost eye contact showing a very high level of internal distractibility.

#### **Recommendations:**

He would benefit from a program that contains over-learning through multi modal teaching in practical situations. He should also have information presented in a simple sentence with one message per sentence and conditional sentences should be in the correct order. Information should be presented slowly and with examples so he has time to explore new ideas.

#### **Vivien's initial assessment:**



He had an abnormal gait when walking. He walked on his toes with a constant side to side rocking motion and carried his arms in front of his body. His torso was curved into a fetal position giving him a kyphosis of the back and he was very inflexible. His coordination and balance were poor and he was unable to remain seated on the beam for any length of time.

He had limited physical strength and no connection between his upper and lower body. He had no coordination between both sides of his body and was uncoordinated when walking. He had some fine motor control however as he could grip the rings and swing on them. His thumb opposition movements were limited

He could not jump except on the trampoline and could not run or ride a bike. He found it difficult to push or pull but his climbing ability did not seem to be impaired.

He was extremely polite and compliant and had relatively good receptive language. He understood what was being asked of him and frequently asked for confirmation that he was being 'good'. His expressive language however was very limited and he only spoke in response to a question and often exhibited echolalia or merely repeating what he perceived to be the correct answer. He had very limited eye contact due to his standing position as this caused him to focus on the ground.

### **System of treatment:**

#### **Physical – gross motor:**

Before Vivien could focus on individual issues for Karl she needed to address his posture. To correct his kyphosis of the back she focused on manually stretching his Achilles tendon, gastrochemius and solus muscles to enable him to touch his heels to the ground and thus enable him to stand more erect.

Vivien taught him to do a tuck sit on the balance beam to help his balance and enable him to differentiate between a body in constant motion and a still body. It took several months for Karl to be able to accomplish this task and be able to sit for up to 30 seconds at a time without exhibiting any rocking motion.



To stretch his shoulders and straighten his spine Karl was required to spend time hanging and swinging on the rings and trapeze. Vivien also manually stretched his shoulder joints while he hung from the high bar and while he lay prone on the floor.

#### **Strength:**

Vivien worked on increasing his endurance and strength by plyometrics, animal walks and obstacle courses. Ring and trapeze activities were used to help Karl connect his upper and lower body. An example ring activity was running on the ground while holding the apparatus overhead and then lifting the legs up into the air and trying to touch Vivien's hands at different heights.

An example trapeze activity was hanging on the apparatus (starting at hip height and progressing to a height higher than Karl could reach requiring him to jump to catch the apparatus) and raising his toes to the bar, hooking his knees and pulling himself to a sit position on top of the trapeze. He then reverses this activity to climb down ending with a backward somersault to the ground (skin the cat). Vivien used swinging on the rings and the trapeze lifting his legs up and over obstacles put in his path to engage his abdominal muscles and to help him to connect his upper and lower body.



Vivien focused on his pre writing skills by asking him to verbalize movements when walking on a beam or jumping on a trampoline to increase his awareness of direction, size and spacing cues. She also incorporated counting and math activities whenever possible such as adding/subtracting bean bags. Karl can now count to 30 while skipping rope on the trampoline.

### **Sensory Stimulation:**

As highlighted in his OT assessment Karl worked on a number of activities to provide excessive movement to activate his vestibular system. This included work on the trapeze and trampoline. Trampoline activities started with shape jumping, directional movement and elementary foundational trampoline skills. The second year of treatment focused on enabling Karl to skip rope on the trampoline, more complex trampoline skills and sequencing skills together. His current goal is to compete at the entry level on trampoline next year. This will require Karl to remember 2 routines each with 10 skills.



When the skipping rope activity was introduced Vivien discovered that Karl's Rhomboid muscles were inactive which may have been connected to his difficulty pushing and pulling as highlighted in his OT report. As a consequence, Vivien focused on activities that isolated the rhomboids. This was a difficult task as Karl had learned to compensate for the lack of use of these muscles over the years. Exercises which proved successful were pulling himself along the floor with his arms in a chin-up style and pushups from a series of box tops with assistance.

In the third year of treatment Vivien taught Karl how to ride a bike using stabilizer wheels for adult bikes. Karl first learnt how to pedal with Vivien's assistance and when he could pedal comfortably Vivien taught him how to break and steer.

When he was able to do this without assistance in the parking lot he went on an unpaved trail with more variety and challenge due to a few short hills requiring Karl to develop strength and stamina to pedal to the top. He now rides confidently on his own exhibiting good balance and motor planning as he pedals, brakes, changes gear and rides on rough terrain and is learning to ride without the stabilizer wheels. He is able to ride between 5 and 10 sec without help



but is not able to initiate the activity without assistance.

In his 3<sup>rd</sup> year of treatment he began swimming with Vivien. He enjoys going into the water and is very trusting of Vivien as he allows her to help him float on his back. He is not completely confident in the pool as he shows discomfort when he is asked to put his face under water. This has been helped with the use of eye goggles. He has worked on a number of arm strokes and leg kicks with the use of a flutter board.

**Social:**

All information is presented slowly and simply and Karl is encouraged to communicate with Vivien over his choices of activity. Karl has progressed from being extremely complacent and compliant to asking for specific activities and at times displaying emotions like crying when he is disappointed. He is able to distinguish between body movements and to express which feels better. This is a critical component in skill learning. Karl now comes to lessons by Handy Dart on his own and often joins in with the other children – teaching others moves on the trampoline and joining in with dances.



### **Major achievements and comments:**

The first video taken after 9 months of treatment shows a much improved posture. His back is straight and his heels are almost completely touching the floor. He is able to maintain this position without rocking side to side.

He is a competent trampolinist – and can now complete complex maneuvers including back drop, stomach drop, ant bounce and  $\frac{3}{4}$  front somersault. Karl is also beginning to show an ability to link skills together such as a doggy drop to a  $\frac{3}{4}$  front somersault to a back drop with a  $\frac{1}{2}$  twist.

During the initial stages of treatment, Karl found it difficult to perform tasks in his parent's restaurant, such as, folding boxes for pizzas. In his second year of treatment, his mother commented that he was not only now able to do that, but was also 'the fastest potato peeler' there!

His posture is greatly improved. He walks straighter with his heels touching the ground, if asked. He tends to revert to toe walking when he is outside of the therapy sessions, but it is not as pronounced. His stimming is now greatly reduced and is an occasional occurrence – usually appearing when he is anxious. He is also able to demonstrate a more appropriate arm swing while walking.

During his third year of treatment, Karl began to initiate conversation and express his emotions, not only with Vivien during his therapy, but also with other children in the program. Karl is beginning to take some leadership roles when other children are present. Karl will demonstrate skills, wait for and lead other children through a circuit, and help other children. Karl will hold hands with another student and jump together on a trampoline. Karl will help to push another child in the hammock. Karl has begun to socialize with other children outside of the gym environment. His first social interaction was a two hour bike ride on a popular trail with another of Vivien's students, a boy about three years younger than Karl who has also been in an intensive Movement Therapy program for the past three years. Following the bike ride the boys joined Vivien for a barbeque supper at her house. The boys were able to engage with each other and interact together. At Vivien's house they colored together and ate supper together. At one point Karl began to cry and was able to express his feelings

clearly when asked what was bothering him. He was disappointed that he had forgotten to bring a video with him for everyone to watch while they were at the barbeque.

Karl started attending school this fall on his request. Since the barbeque, Karl has begun to express a desire for social interaction and is requesting to have “play dates” with some of his friends. He is able to express his needs. For example, he will often ask Vivien when he can come over to her house for dinner and a movie, even describing what he would like to have for dinner!

Karl, now 16, is having weekly play dates with this same student. This student is now learning to speak and is showing an interest in communication and social interaction. Both boys enjoy the same activities, bike riding, jumping on the trampoline, and hiking, making social interaction between the two very rewarding. Karl is now displaying emotionally and verbally his excitement and eagerness to spend time with his new friend. On Halloween Karl spent time with his “best friend”. The boys were able to communicate to each other where they had been on vacation, what they liked to do, and that they would like to go to Disneyland together. This is the first time either of these boys has had a friend their own age. Neither has had someone to have play dates with or invite over to their house for dinner. On one play date, they went swimming, hung out in their bedroom and had dinner together. Karl was invited to his “best friend’s” birthday party and was able to express his delight and excitement and the fact that this was the first time he has been invited to a birthday party outside his family.

### Appendix 3: Case study #2: Luke aged 6

#### **Initial Presentation:**

Luke is an energetic little boy diagnosed with Autistic disorder. He has good receptive language and is beginning to develop expressive language. He is a very talented gymnast and picks up new skills easily. He attends a school for children with special learning needs. He is becoming more cooperative but has difficulties interacting in groups and waiting his turn.

#### **Occupational Therapy Report Sep 2005**

**Behavior:** Luke was referred for assessment due to ongoing concerns about his limited communication and social interaction, impaired imaginative play, less than typical eye contact and climbing. He was described as a ‘young boy with his own agenda who has a hard time moving from that agenda’. He had difficulty taking turns, following instructions and expressing his feelings when upset or frustrated. He wanted everything to be perfect and had to follow strict routines – getting angry if not allowed to complete these. As a consequence he had difficulty with a number of the assessments as he would wreck the toys, cry and whine if things did not go as he wanted.

**Fine Motor Function:** Luke was originally having difficulty crossing the midline but has begun to demonstrate emerging separation of the two sides of his hand on occasions. He could thread beads onto a string and use scissors.

**Sensory status:** Luke had typical sensory performance for movement but had processing difficulties with all other areas of sensitivity including tactile, taste, smell, visual, auditory sensitivity. This under responsiveness led him to seek out certain sensations and he could get overly excited during movement activities, liking to touch people and move quickly from one activity to another. He however had difficulty filtering auditory information and as such found it hard to function in loud environments.

**Recommendations:** The use of a visual schedule helps Luke wait his turn and direct his attention to the task at hand. It was recommended that he continue with the OT and the behavioral consultant.

#### **Psychology Report 2005:**

Luke was referred to the psychologist due to concerns about developmental and social delay in particular his expressive language delay. His play was rigid and repetitive and it was hard to assess his receptive language as he didn't pay attention to instructions and was more focused when doing hands on activities and not expected to listen or use language. The tests for assessment required listening to an adult and initiating and frequently changing tasks – things that he found hard and therefore it was hard to assess him fully. He was found to good visual and non-verbal skills but his verbal skills were lower than expected as were his adaptive and social skills.

### **Recommendations:**

Goals included learning to imitate others verbally and physically, paying attention to people, playing appropriately with toys and other children, increasing tolerance for working with an adult and following instructions and cooperating with adult requests.

General principles for teaching Luke included lots of structure and simple concrete rules, positive reinforcement for appropriate behavior, cues to expected behavior given repetitively and in multi sensory dimensions, direct teaching and demonstration with gradual fading.

### **Vivien's Initial assessment:**

Luke was an energetic, nonverbal four and a half year old who exhibited severe behavioral problems – kicking, screaming and throwing himself on the floor if he didn't get what he wanted. The initial assessment was difficult to complete as he would not co-operate and was not willing to take direction or follow instruction. Vivien dealt with this by physically removing him from the gym and enforcing a 'time out' – only allowing him back into the gym when he calmed down and ensuring that when he reentered the gym he had to complete the task he had chosen not to do.

During the first month these periods of calming down often constituted the vast majority of the session. He commonly spent only 10 minutes of his half an hour session in the gym. During this time he showed an intense interest in using the 'yellow swing' and the air track and would often repeatedly run to them. His interest in the yellow swing supported the findings of his OT as they reported that he often sought out vestibular stimulation to calm him down in periods of high anxiety.

As a full assessment of his gymnastic abilities was therefore problematic Vivien chose to focus on his behavior, lack of communication and his need for sensory stimulation. His mother also mentioned a need to work on his confidence as she felt he was a highly anxious child who was aware of his differences and needed more self confidence.



### **System of Treatment:**

#### **Behavior:**

When Luke was participating in the activities he was focused and happy but his frequent and severe tantrums often prevented him from participating. Vivien attributed this behavior to his unwillingness to take instruction due to his dislike of change to routine and his high level of anxiety in coming to the gym – a place where change and risk taking were part of each class. He was capable and energetic and so she created a routine in the gym to channel his energy, provide intense sensory stimulation and allow her to challenge his boundaries and increase his tolerance of change. She kept the routines consistent from week to week to reduce his anxiety and allow her to introduce new activities individually and slowly. She ensured that all new activities were introduced along with known activities and highly desired pieces of equipment (initially the yellow swing but now includes the foam pit, bars and hammock). With strict adherence to the 'time out' system and reinforcing any good behavior with a turn in the 'yellow swing' his tantrums decreased and by the second month he became more willing and co-operative. His time in the gym increased to 25minutes with only 5 minutes in time outs and he became much more willing to comply and began to develop trust in Vivien.

#### **Communication and social interaction:**

Luke was non-verbal when he started and had very little eye contact. He found it hard to focus, work with an adult or wait his turn. Vivien therefore used picture symbols to represent every activity and would arrange them into a visual timeline to represent the activities Luke would have to complete. If he was required to complete a new or undesired activity she would use separate number cards to represent the number of activities he needed to do until he was able to do his chosen activity. Luke could then

remove each number at the end of each circuit – physically representing how much longer he was required to participate. He responded well to verbal prompts concerning the order of activities (e.g. “first this then the yellow swing”). Within 3 months Vivien expanded his sessions to 45 minutes. At this time he began to say words and was encouraged to use his words to ask for his reinforcer activity. He was encouraged to say the name of the piece of equipment he was shown in the ‘picture symbol’ or ask verbally for his choice of activity.

Vivien integrated language into each activity where possible (e.g. repeating ‘over’ ‘over’ as he walked over the bean bags on the beam or singing nursery rhymes to help with his crawling)



After 5 months Luke started to integrate with a one hour preschool class although Vivien was with him at all times. He was able to participate in the parallel play activity for the warm up as long as Vivien was holding his hand. During the class he had to learn to wait his turn at activity stations. He appeared to enjoy this and began to use his words more. He also began to talk to another child in the class and would hug her at the end of each lesson. He would find it hard however to focus towards the end of the lesson. With time he enjoyed being part of a group and could participate without Vivien’s constant attention and was able to sustain his attention for the whole hour. Free time was then introduced where Luke was able to pick a favorite activity for the last 2 minutes as a reward for appropriate behavior.

Luke is presently in a group with two other autistic children. He likes the interaction and often waits on a circuit so that he can complete an activity together with a friend. He is building relationships and looks forward to the group activities and interactions. His use of language has increased and he can comment on his feelings and use full sentences. Recently he became distressed as he wanted his friend to join him on the air track but was unable to ask. Vivien modeled the appropriate behavior and he was encouraged to use his words and stop crying. He was able to do this and the other child joined him in the activity.



### **Sensory Processing:**

Initially he was keen to spend time in the yellow swing as it provided extreme Vestibular Stimulation. Vivien used it as a reinforcer in every lesson. He rarely asks for it now which may be a sign that his vestibular system is becoming less hypoactive.

He still gains vestibular stimulation from the rings and trapeze which are more complex activities requiring a higher level of skill, motor planning and coordination.



His routine included intense proprioceptive stimulation in the foam pit and activities on the



beam - stepping over bean bags, walking on footprints, walking up and down inclined beams and throwing and catching whilst balancing.

Working on the trampoline provides him with proprioceptive stimulation, a way to get rid of excess energy, take instruction and develop relationships. He holds Vivien's hand while trying new moves which allows him to stay focused on the activity (usually 5mins). He participates in games with other children, often laughing and showing a desire to connect with others. He has become skilled on the trampoline and can now link a number of moves which is helping develop his ability to motor plan. Luke's self esteem has increased along with his confidence and competence. This motivates and encourages Luke to take on new challenges.



Vivien concentrated on his poor grip strength in several ways including climbing the wall bars, swinging on the rings and trapeze. He disliked this at first but has made substantial improvements and can now swing on the rope, climb the rope on the air track and does brachiation work on the bars. His pencil holding skills have developed as a result of this work.



After a number of months, Vivien began to teach Luke how to ride a bike as this incorporated both vestibular and proprioceptive stimulation, bilateral integration and would improve his confidence as it is an 'age appropriate' activity. Initially, he was unable to pedal and so Vivien started teaching him with bare feet, as the foot is highly sensitive and Luke was able to feel the pedal and grip with his toes. At first, Vivien and his mother had to move his legs for him. In a few weeks, he was doing the pedaling motion without assistance. At this point, Vivien had Luke begin to pedal with his shoes on. This transition was easy for him. He is now focusing on steering and looking ahead to allow him to control where he is going independently.

### **Progress:**

#### **Speech Language and Occupational Therapy Follow up August 2006**

Luke had good receptive language and could follow a variety of instructions. He found it easier when not distracted by outside noise and performed better with visual support. Luke had developing expressive language and was able to request objects, actions and information. This was an area of focus however as a way to engage Luke in conversation as an alternative to his method of communication.

#### **Fine motor Function:**

Luke made significant gains since the last assessment. He has a left hand preference and uses his right hand as a stabilizer. His motor control for coloring and drawing is weak but is highly dependent on his motivation and tolerance for

imperfections as he wants all of his work to be perfect and doesn't feel he can achieve this on his own.

### **Sensory Status:**

He was sensitive to some hygienic processes but his sensory sensitivities were not seen as impacting on his life and consequently not seen as a priority.

### **Occupational Therapist Report Oct 2006**

Luke was referred to the Occupational Therapist to help him meet his sensorimotor needs and help him feel more confident and calm in challenging situations. These needs included work on his attention, sensory processing, fine and gross motor skills, crossing the midline and trunk stability. He had a strong need for regular sensorimotor input and was constantly trying to meet this need. He was hypo-sensitive to proprioceptive, vestibular and tactile/deep pressure input - often using deep pressure input or seeking out vestibular input to help calm him in high stress situations and often combining the two (e.g. swinging and then crashing). During swinging he demonstrated good eye contact and was able to move his body in ways that would otherwise be a motor challenge for him. He often avoided activities that have a light touch or messy play but liked playing in rice, sand or bean bins.

### **Issues and Challenges:**

- Communication – he uses few words and physical interaction to get what he wants
- Perseveration – He has rigid patterns in play and resists outside involvement.
- Frustration Tolerance – he has very low tolerance for events that are not under his control and that deviate from his predetermined expectations of the activity.
- Limit setting and aggression – he cannot accept limits which block him from performing what he wants and may throw objects.

### **Recommendations:**

Luke should continue to work with an OT and should purchase therapeutic equipment to use at home including a trampoline, swing, Lycra body sock, hammock and tactile bins.

### **Movement Therapy Progress and Goals:**

Luke is coordinated, strong and flexible. He is very capable, and has the potential to be an excellent athlete. Channeling his talent so that it can be realized, is my goal for Luke. His obsessive nature still makes it difficult to teach him new skills. He likes routine and once he has accomplished something he prefers to repeat it instead of trying something new. It is easier now, however, to encourage Luke to expand his skill learning than it has been in the past. He loves group activity and socializing with other children. He is beginning to follow his peers and shows an interest in trying new activities when

he sees a friend doing it. He is still sensitive and gets upset when things don't go the way he wants or if he makes a mistake. We are focusing on helping him to accept mistakes as a natural process of learning and working on his tolerance to frustration and ability to persevere at a difficult task. As his confidence develops, he is building an internal sense of motivation to explore, discover and challenge himself in new ways. Vivien will continue to push his boundaries to allow him to overcome risk and trust her.

During the summer, Luke was integrated into a typical summer camp program, which included lots of movement, vestibular, and proprioceptive activities and opportunities for social and emotional development. Intense movement sessions were mixed with fine motor and/or quiet play sessions such as building blocks, stringing beads, and coloring with other children. Luke was encouraged to learn cooperative games and to participate in all of the camp activities. Vivien developed a picture board that showed all of the children in what order activities would occur for the day and as much as possible, kept a similar flow of activities from day to day.

For example: 9:00-9:30	Arrival and quiet play
9:30-10:30	Physical Activities: class and games
10:30-10:45	Free Play in the gym
10:45-11:00	Snack
11:00-11:45	Arts and crafts
11:45-12:30	Outdoor activities: sidewalk chalk, bike riding, games, Hiking
12:30-1:00	Lunch

Luke responded very well to the integration, mixing with the other children and participating with all of the activities. By the end of the first week, it was decided to cut back on the amount of time that his mother attended the camp to support him. He had one melt down, which in Vivien's opinion, was quite justified. Another child was intentionally mixing up a puzzle, putting pieces in the wrong place, which caused Luke to get very upset. He wanted to correct her and show her where the pieces were meant to go. After removing him from the room and allowing him to calm down, Vivien explained that it was her turn to play with the puzzle and that when she was finished, Luke could fix it. He was able to accept this and rejoin the group with no further problems.

The fall, Luke is being integrated into a typical class with children of his own age and skill level. He is being supported by a member of the Movement Therapy team at Club Aviva. His aide's job is to appear to be an assistant for the entire class, and only provide one-on-one help to Luke when a problem arises. Luke's ability to join the class, follow directions, and cope with the transitions from event to event has improved each week.

A milestone event occurred recently for Luke. At the end of class, the children are rewarded for following directions and appropriate behavior with three minutes of free time. Luke had experienced an exceptional day and was enjoying his free time while Vivien and his dad were discussing how well he was doing. All of a sudden, they heard Luke crying at the top of his lungs, so Vivien hastened to the other end of the gym to support Luke and his aide, thinking that there was an autism-related issue occurring.

She discovered that Luke was distressed because all of the other children were leaving to go home, and he was having so much fun playing with them, that he did not want them to leave. "Vivie, tell the boys to come back, I want them to stay and play with me."

Luke wasn't the only one shedding a tear that day!

#### Appendix 4: Support from Parents and Other involved professionals

C1: 9 years old Worked with Vivien since September (6 months)

#### **Background:**



Lost speech at 14 months (maybe connected with MMR). The loss was sudden, he could use 8-10 words before, but suddenly stopped using them.

He was progressing steadily on 'ages and stages' until 14 months and then started to go downhill.

He has good receptive language and can sign simple requests and emotions.

He has low muscle tone and never used to be able to grip.

He always wants something in his mouth – sucks his finger, uses an age appropriate dummy at school but is very specific about the texture of his food - only eating it if it is pureed or soft (e.g. cinnamon rolls).

### **Progress:**

“He is learning to be active” and can now grip the trapeze.

He is a lot more interactive and makes more eye contact – he will now look at Vivien and will say her name if he wants attention.

His babbling is getting louder – his mother thinks he needs the physical tools to begin to verbalize.

There has been a huge improvement in his motor skills.

In the playground, he now seeks out his own natural balance beams to practice his skills.

C2: 11 years old Worked with Vivien since January (13 months)

### **Background:**

Diagnosis at age three: He wasn't paying attention to his parents, he did not respond to his name, and he wasn't talking.

He has help with his speech and works with an OT.

He has support all day at school with 2 different EA's. At school, he is isolated in his own room where he learns basic ideas such as the alphabet and counting to 50. His mother feels he is at a kindergarten level.

He has receptive language and understands approximately 70% of what is said to him.

If he gets upset, he holds his hand in his mouth.

He used to have issues with his anger and often used to bite or use physical violence if upset. He was like a "tornado" - charging, biting, pinching, scratching and kicking. He is now taking medication for this and he has improved.

He is interested in movies and often rewinds parts over and over again.

**Progress:**

When he first started, it was hard to get through half an hour – now he "loves it".

"Since he has been here he talks more and has a lot more confidence. For him, it is very hard to try anything and now he will try things he wouldn't try before". This increase in confidence is helping him try to say new words.

The exercise helps his lungs grow bigger which has meant his words are louder and it is easier to understand him.

**Comments:**

"Medication can't improve confidence"

"He loves it – he laughs all the way down here"

"He is a big two-year-old"

"I don't know how to say it – he's happier, he's just better all around"

"He loves being squished – that's why he loves the hammock – it envelopes him and gives him pressure"

C3: Worked with Vivien since December 2005 (1 year and 2 months)

**Background:**

Diagnosis at age three: He was not talking, so the family talked to a speech pathologist, paediatrician, behaviour consultant, behaviour interventionist before going to Sunny Hill Health Centre in Vancouver for a diagnosis. He was originally given a diagnosis of Developmental Delay, but after a second assessment was diagnosed as Autistic.

Original intervention focused on his speech in an attempt to alter his behaviour. Now, they are focusing on altering his behaviour and hoping that his speech will follow.

He can speak and understand others but this is at the level expected for a 2-3 year old – which is 2-3 years below his chronological age.

He works with a number of professionals including a speech pathologist, an occupational therapist, and a behaviour consultant and participates in horse riding and music therapy.

He goes to a private school for children with Special Educational Needs.

He used to be frustrated and show signs of anxiety, crying, running, throwing himself on the floor, and scratching his own face. He struggled in preschool and had begun to give up trying - “he knew he was not the same so how would you feel?”

He is on the GFCF diet – free of gluten and dairy products.

### **Progress:**

He has learnt to ride a bike. At first he couldn't push down the pedals – he had no power. Neither his OT, or his parents could teach him but Vivien thought it was to do with under sensitivity in his feet. She set up a program where he started pedalling with his bare feet, then in socks, then in thin shoes until now he can ride a bike in normal shoes.

He has also learnt how to hold a pencil – Vivian taught him how to use his arms and built up his upper body – helping his gross motor skills before working on his fine motor skills.

### **Comments:**

“He wants things his own way and has a tough time if things are not his way. Vivien is the first person who can say no. The first 2-3 sessions were spent with him in time out but he is getting used to it now.”

Funding is a big issue – after the first year his parents were told to return the money they had spent on Vivien's movement therapy as it did not have “any proven success”. They were told they could use the money when he was 6 – therefore acknowledging that the program was valid.

“It is highly motivating for him to be working with another child where he can be himself”

“He is more sociable here. When he is physical he feels more able so he excels. He feels more confident.”

“This helps his speech as when he is moving he is more vocal.”

When they first started with another child, they didn’t acknowledge each other. Now they will wait for each other – they know that they exist.

He has started to know if and when his sister is crying

He has rules and structures that guide his life. Movement therapy allows him to try new things and try new rules.

C4: Worked with Vivien since September 2006 (1 year)

**Background:**

He has no expressive language, but good receptive language.

He has low muscle tone and poor balance.

He is visually impaired and finds it hard to focus on objects.

He has poor educational achievement – and is currently working at around the kindergarten level.

He is not a violent person but when frustrated can use physical movements to express himself and as he has no sense of personal space this can lead to problems.

He has motion sickness and finds it hard to move in the hammock or fast on other equipment.

**Progress:**

He has improved his balance and ability to move around – he is more steady and has a more solid, firm gait.

His hand-eye coordination is improving – he is more able to track fine motor skills and is more focused on tasks.

He approaches people at school – his eye contact is better and he walks up to people he recognises in school.

**Comments:**

He is better at working in school and interacting with people – I think it has something to do with having to be focused – not out there in 'la la land' associated with autistic children.



## Movement Therapy

Founded in 2002 by Vivien Symington, B.A./B.P.H.E., Queen's University

### Autistic Children Discovering Life Through Movement: Movement Therapy

#### written by:

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#### Acknowledgements:

**David Symington**, Professor Emeritus Rehabilitation Medicine Queen's University, for his constant support and mentorship throughout my life and for setting the standard of Excellence, Commitment and Caring for all that you participate with in life.

**Andrew van Buuren**, my son, for his support and commitment to the program over the past 6 years. His problem solving abilities have been a great asset to our team.

**Emily Burgoyne** for her diligence in proofing, editing and rewriting this document until it was completed.

**Will Yan** for continuing to be a reliable and stalwart member of our team.

**Caroline Standring**: Without Caroline's dedication, passion and commitment to Movement Therapy and her desire to understand why this works, this document would not have been possible.

**CKNW Orphans Fund** for their generous donations for specialized equipment and sponsorship of children to attend Movement Therapy Summer Camps.

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### About the Founder

Vivien Symington is the owner of Club Aviva Recreation Ltd., which is a gymnastics and related sports facility in Coquitlam, B.C, founded in 1986. In her formative years, Vivien was a gymnast. To everyone's surprise, Vivien discovered gymnastics while going to work with her father, Dr. David C Symington, a medical practitioner whose specialty was Rehabilitation Medicine. Vivien was able to develop her gymnastics skills throughout her childhood, but really had a chance to excel while taking her B.A./B.P.H.E at Queen's University, minoring in adaptive physical education, psychology and math. Vivien then continued her education at the University of Dalhousie in the M.Sc. program. During this time she established a gymnastics club and worked on faculty in the Physical Education program at Dalhousie University. Vivien completed her course requirements for her M.Sc., but did not defend her thesis. Vivien's first experiences at developing programs for children with special education requirements were during her time at Dalhousie. Vivien worked first with some deaf children and then later assisted a good friend of hers in developing a program for the School for the Blind. Vivien lived in Halifax for nine years before moving to Coquitlam where she has been residing for 21 years. Vivien established Club Aviva in 1986 and has continued to foster a philosophy of embracing all participants and encouraging each individual to develop at their own pace. Vivien firmly believes that gymnastics basics are the foundations from which all movements in life are developed. Over the years, Vivien has continued to work in the adaptive physical education field combining her knowledge of gymnastics training (conditioning, stretching and preparing the body for increased levels of skill development) with her University training which enables her to understand and relate to children at different developmental cycles.